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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,822	06/26/2003	Sang-Hyun Lee	3364P108	5522

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,822	Applicant(s) LEE ET AL.	
	Examiner Kevin M. Burd	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 25 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Function descriptive material recorded on some computer readable medium becomes structural and functionally interrelated to the medium and therefore, statutory. Therefore, a computer readable medium with computer readable instructions embodied there upon should be recited in claim 25.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 10-16 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mostafa et al (US 7,110,732) in view of Tal et al (US 5,909,384).

Regarding claims 1, 16, 19 and 25, Mostafa discloses an apparatus, method and recording medium for processing digital intermediate frequency signals in a radio system shown in figure 8. Digital frequency mixers 132I and 132Q convert the received intermediate frequency (IF) signal to base band (column 14, lines 41-55). Filters 134I and 134Q removes high band signals from the converted base band signals. The filters are capable of supporting multiple communication standards as long as the signals are received in a desired band. Mostafa does not disclose a controller and coefficient calculator for calculating new filter coefficients using received information and providing the calculated coefficient of the receiver filter to the controller. Tal discloses a system for dynamically adapting the length of a filter. The quality of a received signal is measured and compared to a threshold value (figure 4, blocks 154 and 158). Filter coefficients are calculated and the length of the filter is changed according to this comparison (abstract). In addition, a number of taps are either added or removed from the filter (figure 4). This will increase or decrease the performance of the system to a desired level (abstract). This allows the system to cope with the worst-case distortion situations. However, since these situations are rare, wasted consumption of CPU resources is minimized (column 1, lines 36-51). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the system of Tal into the receiver of Mostafa.

Regarding claim 2, Mostafa discloses the received radio frequency (RF) signal is down converted to an IF signal upon mixing the received signal with a local oscillator

signal (column 12, lines 46-52 and figure 4). The IF signal is input to an ADC 130 before down conversion to base band.

Regarding claims 3 and 20, as stated above, Tal discloses adding or removing taps to and from the filter. The additional taps will be the additional resources that are used when more distortion is present in the received signal.

Regarding claims 4 and 21, Tal discloses the filter will have a shorter length when the quality of the received signal is good and the filter will have a longer or longest length when more distortion is present (column 1, lines 36-51).

Regarding claims 5 and 6, as stated above, Tal discloses the filter is reconfigurable according to the quality of the received signal.

Regarding claim 10 and 22, Tal discloses a cost is defined in configuring the filter's length. The desired quality of the received signal is weighed against the filter complexity and subsequent increase in power consumption.

Regarding claims 11-13 and 23, as stated above, Tal discloses dynamically adjusting the filter according to a desired quality level of the received signal (figure 4).

Regarding claims 14, 15 and 24, as stated above, Tal discloses the filter length is adjusted according to the received signal and a desired quality level. The desired quality level is input to the receiver.

4. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mostafa et al (US 7,110,732) in view of Tal et al (US 5,909,384) further in view of Murakami et al (US 6,678,317).

Regarding claim 7, the combination of Mostafa and Tal is disclosed above in paragraph 3. The combination does not disclose the structure of the receive filter. Murakami discloses the basic structure of a conventional discrete filter 6 for removing distortion caused by fading (column 3, lines 7-19 and figure 16). This filter will remove any out of band signals and noise. The filter comprises filter coefficient multipliers, registers summers and coefficient updating circuitry as shown in figure 16. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the conventional discrete filter of Murakami into the system of the combination of Mostafa and Tal. Using a simple, convention filter will reduce the cost and complexity at the receiver.

Regarding claim 8, the selection of the length of the filter and the corresponding coefficients will be used for one of the communication standards the receiver is capable of supporting.

Regarding claim 9, as stated above in paragraph 3, hardware is reduced since the combination does not require using the largest filter at all times.

5. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al (US 6,678,317) in view of Tal et al (US 5,909,384).

Regarding claim 17, Murakami discloses the basic structure of a conventional discrete filter 6 for removing distortion caused by fading (column 3, lines 7-19 and figure 16). This filter will remove any out of band signals and noise. The filter comprises filter coefficient multipliers, registers summers and coefficient updating circuitry as shown in

figure 16. The filter is capable of supporting multiple communication standards as long as the signals are received in a desired band. Murakami does not disclose the digital filter is constructed to share common resources and select additionally required resources other than the shared resources by a switching operation. Tal discloses a system for dynamically adapting the length of a filter. The quality of a received signal is measured and compared to a threshold value (figure 4, blocks 154 and 158). Filter coefficients are calculated and the length of the filter is changed according to this comparison (abstract). In addition, a number of taps are either added or removed from the filter (figure 4). This will increase or decrease the performance of the system to a desired level (abstract). This allows the system to cope with the worst-case distortion situations. However, since these situations are rare, wasted consumption of CPU resources is minimized (column 1, lines 36-51). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the system of Tal into the filter of Murakami.

Regarding claim 18, as stated above, Tal discloses the filter length is adjusted according to the received signal and a desired quality level. The desired quality level is input to the receiver.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Goeckler (US 6,304,301) discloses a system for receiving

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communication signals that supports multiple communication standards (column 1, lines 52-55 and column 2, lines 23-46 and column 3, lines 30-34).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd
12/7/2006


KEVIN BURD
PRIMARY EXAMINER